PORSF
11.3.18.1 V10

1400 eh2
Material Safety Data Sheet

1 Company Identification

Innospec Fuel Specialties
8375 S. Willow Street
Littleton, CO 80124

Product information 1-800-441-9547
In Case of Emergency
Call Chemtrec 1-800-424-9300

2 Composition / Ingredient Information

Material	CAS Number	%
Proprietary Polymers		20-40
*Vinyl Acetate Monomer	108-05-4	<0.25
Heavy Aromatic Naphtha	64742-94-5	<5
*(Naphthalene)	91-20-3	(<1)
2-Ethylhexyl Nitrate	27247-96-7	30-50
*Ethylene Glycol N-Butyl Ether	111-76-2	<10
*Xylene	1330-20-7	20-40
*(Ethylbenzene)	100-41-4	(5-10)

*Disclosure as a toxic chemical is required under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

USEPA SF
1288580

3 Hazardous Identification

Potential Health Effects

Inhalation of fumes or vapors from heated product may cause skin, eye and respiratory tract irritation. Skin contact may cause skin irritation with discomfort or rash.

Minute amounts of petroleum hydrocarbons aspirated into the lungs during ingestion or vomiting may cause mild to severe pulmonary injury and possible death.

Individuals with preexisting diseases of the kidneys or liver may have increased susceptibility to the toxicity of excessive exposures.

Prolonged or repeated exposure to Ethylene Glycol N-Butyl Ether may cause skin irritation which may be slow to heal. A single prolonged exposure may result in the material being absorbed in harmful amounts. Excessive exposure may cause hemolysis, thereby impairing the blood's ability to transport oxygen. Repeated minor exposure may result in absorption of harmful amounts. May cause moderate eye irritation which may be slow to heal. May cause moderate corneal injury. Effects may be slow to heal. Vapors of Ethylene Glycol N-Butyl Ether may irritate eyes. A single prolonged excessive inhalation

exposure may cause adverse effects. Excessive exposure may cause irritation to upper respiratory tract. Observations in animals include blood and kidney effects. Single dose oral toxicity of Ethylene Glycol N-Butyl Ether is considered to be moderate. Small amounts swallowed incidental to normal handling operations are not likely to cause injury; swallowing amounts larger than that may cause injury. One case of Massive Ingestion (i.e. attempted suicide) reported blood (hemolysis) and kidney effects.

Inhalation or ingestion of Heavy Aromatic Naphtha may cause central nervous system depression with anesthetic effects, such as dizziness, headache, confusion, incoordination and loss of consciousness. Higher exposures may result in fatality from gross overexposure. Ingestion may cause gastrointestinal irritation. Aspiration hazard! Small amounts aspirated into the lungs during ingestion or vomiting may cause lung injury, possibly leading to death. Symptoms of aspiration into the lungs include coughing, gasping, choking, shortness of breath, bluish discolored skin, rapid breathing and heart rate. Chemical pneumonitis from aspiration may result in fever. Pulmonary edema or bleeding, drowsiness, confusion, coma and seizures may occur in more serious cases. Symptoms may develop immediately or as late as 24 hours after the exposure, depending on how much chemical entered the lungs.

Xylene can penetrate the skin in amounts capable of causing systemic toxicity. Eye contact may cause eye irritation with discomfort, tearing or blurring of vision. Inhalation of Ethylbenzene may cause irritation of the upper respiratory passages with coughing and discomfort.

Inhalation or ingestion of Xylene or Ethylbenzene may cause nonspecific discomfort, such as nausea, headache, or weakness; or temporary nervous system depression with anesthetic effects such as dizziness, headache, confusion, incoordination, and loss of consciousness.

Inhalation or ingestion of Ethylbenzene may cause abnormal liver or kidney function. Aspiration of Ethyl benzene into the lungs during ingestion or vomiting may lead to chemical pneumonitis.

Ingestion of Xylene or Ethylbenzene may cause gastrointestinal tract irritation. Higher exposure to Xylene may lead to cardiac stress; anemia and other blood changes; respiratory effects; possible liver and kidney damage; or fatality from gross overexposure.

Inhalation or ingestion of 2-Ethylhexyl Nitrate may initially cause nonspecific discomfort, such as nausea, headache, or weakness. Exposed workers reported throbbing headaches and heart palpitations. Data to evaluate the skin permeation hazard of this compound are insufficient. There are no reports of human sensitization. No adequate epidemiologic studies are available for this compound.

Carcinogenicity Information

Vinyl Acetate Monomer, Naphthalene and Ethylbenzene have been classified by the Internal Agency for Research on Cancer (IARC) as possibly carcinogenic to humans (Group 2B). This IARC classification was based upon limited evidence of carcinogenicity to animals and inadequate evidence of carcinogenicity to humans.

4 First Aid Measures

Inhalation

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Skin Contact
Flush skin with water after contact. Wash contaminated clothing before reuse.

Eye Contact
In case of contact immediately, flush eyes with plenty of water for at least 15 minutes. Call a physician.

Ingestion
If swallowed, do not induce vomiting. Allow victim to rinse his mouth and then to drink 2-4 cupfuls of water. Never give anything by mouth to an unconscious person. Call a physician.

Notes to Physicians
Activated charcoal mixture may be administered. To prepare activated charcoal mixture, suspend 50 grams activated charcoal in 400-ml water and mix thoroughly. Administer 5 ml/kg or 350 ml for an average adult.

Because of the danger of aspiration, emesis or gastric lavage should not be employed unless the risk is justified by the presence of additional toxic substances. Activated charcoal may induce vomiting, but may be given after emesis or lavage to absorb toxic additives. Steroid therapy in mild to moderate cases does not improve outcome. Bacterial pneumonia often occurs after exposure, but prophylactic antibiotics are not indicated and should be reserved for documented bacterial pneumonia.

5 Fire Fighting Measures

Flammable Properties
Flash Point..... 101°F (38.3°C)
Method..... PMCC

Flammable Properties of 2-Ethylhexyl Nitrate
Flash Point.....79°C (174°F)
Method.....TCC
Flammable limits in air .....LEL 0.25% by volume
Autoignition .....130°C (266°F)
Autodecomposition .....185°C (365°F)
Exotherm initiation temperature .....120°C (248°F)
(Self-heating sustained due to decomposition)
Combustible Heating can release vapors, which can be ignited.

Hazardous gases/vapors produced in fire are carbon monoxide and oxides of nitrogen. Risk of explosion if heated under confinement.

Extinguishing Media
Water Spray, Foam, Dry Chemical, CO_2.

Fire Fighting Instructions
Wear self-contained breathing apparatus. Wear full protective equipment. Evacuate personnel to safe area. Cool tank/container with water spray. Fight fire from maximum distance, use extreme caution as heat may decompose material and rupture containers.

6 Accidental Release Measures

Note: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) SECTIONS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up. Soak up with sawdust, sand, oil dry or other absorbent material. Remove source of heat, sparks, flame, impact, friction, or electricity. Dike spill. Prevent material from entering sewers, waterways, or low areas.

Spill Clean-Up

Soak up with sawdust, sand, oil dry or other absorbent material.

Accidental Release Measures

Spills are very slippery and should be cleaned up promptly. Unless released material is cleaned up immediately for reprocessing, recycling, or reuse, a release of 100 lbs. may trigger the reporting requirements of CERCLA Section 103.

7 Handling and Storage

Handling (Personnel)

Avoid breathing vapors or mist. Avoid contact with eyes, skin, or clothing. Wash thoroughly after handling.

Handling (Physical Aspects)

Keep away from heat, sparks and flames.

Storage

Store in a well-ventilated place. Keep container tightly closed. Store in accordance with National Fire Protection Association recommendations. Refer to Innospec Fuel Specialties **PLMR-2001-8, Issue 2, "CI-0801 Cetane Improver Safety and Handling"** for detailed storage and handling guidance. This bulletin presents background information on thermal stability for storage and safe handling. This bulletin also describes proper, safe unloading of equipment from bulk containers.

Important considerations are:

- Properly insulated tank car or tank truck.
- Cap steam coils and valves on tank car, truck and storage tanks.
- Water deluge system for storage tank.
- One or more of the following safeguards is recommended - unrestricted recirculation loop and/or thermal sensor and relief in pump system and/or low flow pump interlock.

8 Exposure Controls

Engineering Controls

Use only with adequate ventilation. Keep container tightly closed.

Personal Protective Equipment

Eye/Face Protection

Wear coverall chemical splash goggles or safety glasses.

Respirators

Where there is potential for airborne exposures in excess of applicable limits, wear NIOSH/MSHA approved respiratory protection.

Protective Clothing

Where there is potential for skin contact have available and wear as appropriate Impervious gloves, apron, pants, hood and jacket.

Exposure Limits

Xylene:

PEL (OSHA)	100 ppm, 435 ,mg/m^3, 8 hr TWA
TLV (ACGIH)	100 ppm, 434 mg/m^3, 8 hr TWA STEL 150 ppm, 651 mg/m^3, A4; BEI
AEL* (Innospec Fuel Specialties)	100 ppm, 8 & 12 hr, TWA, skin 150 ppm, 15 minute TWA

Ethylbenzene:

PEL (OSHA)	100 ppm, 435 mg/m^3, 8 hr, TWA
TLV (ACGIH)	100 ppm, 434 mg/m^3, 8 hr, TWA, A3, BEI STEL 125 ppm, 543 mg/m^3
AEL* (Innospec Fuel Specialties)	None established

Vinyl Acetate Monomer:

PEL (OSHA)	None established
TLV (ACGIH)	10 ppm, 35 mg/m^3, 8 hr, TWA, A3 STEL 15 ppm, 53 mg/m^3, A3
AEL* (Innospec Fuel Specialties)	10 ppm, 8 & 12 hr, TWA

Heavy Aromatic Naphtha:

PEL (OSHA)	None established
TLV (ACGIH)	None established
AEL* (Innospec Fuel Specialties)	50 ppm, 300 mg/m^3, 8 hr, TWA

Naphthalene:

PEL (OSHA)	10 ppm, 50 mg/m^3, 8 hr. TWA
TLV (ACGIH)	10 ppm, 52 mg/m^3, 8 hr TWA, Skin; A4 STEL 15 ppm, 79 mg/m^3, A4
AEL* (Innospec Fuel Specialties)	None established

2-Ethylhexyl Nitrate:

PEL (OSHA)	None established
TLV (ACGIH)	None established
AEL* (Innospec Fuel Specialties)	5 ppm, 8 & 12 hr, TWA

Ethylene Glycol N-Butyl Ether:

PEL (OSHA)	25 ppm, skin
TLV (ACGIH)	20 ppm, 8 hr TWA, A3
AEL* (Innospec Fuel Specialties)	None established

The "skin" notation following the exposure guideline refers to the potential for dermal absorption of the material. *It is intended to alert the reader that inhalation may not be the only route of exposure and that* measures to minimize dermal exposure should be considered

* AEL is Innospec Fuel Specialties' acceptable exposure limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

9 Physical and Chemical Properties

Physical Data

Appearance..... Amber
Form..... Liquid
Odor..... Aromatic
Specific Gravity..... 0.927 @ 60/60°F (15.6/15.6°C)
Density..... 7.72 lbs./gal. @ 60°F (15.6°C)
Pour Point..... <-0.4 (-18)
Solubility in water..... < 10 wt%

Physical Data for 2-Ethylhexyl Nitrate

Appearance..... Light straw colored
Form..... Liquid
Odor..... Strong Pungent
Specific Gravity..... 0.967 @ 60/60°F (16/16°C)
Density..... 8.06 lbs./gal @ 60°F (16°C)
Solubility in water..... 0.02 wt%
Boiling Point..... Decomposes above 100°C (212°F)
Vapor Pressure..... 0.035 mm Hg @ 20°C (68°F)
Vapor Density..... >1 (air=1)
Evaporation Rate..... <1 (Butyl Acetate = 1)

Physical Hazard

2-Ethylhexyl nitrate should not be exposed to steam, sparks, flames, or hot surfaces. Rapid gas evolution during decomposition may lead to bursting of container and may be explosive if heated under confinement.

10 Stability and Reactivity

Chemical Stability

Stable at normal temperatures and storage conditions.

Incompatibility

Incompatible with strong oxidizers and fluorine.

Decomposition

Decomposes with heat. Hazardous gases/vapors produced are oxides of nitrogen and carbon monoxide. Decomposition temperature is >100°C (>212°F).

Polymerization

Will not occur.

11 Toxicological Information

Animal Data

Heavy Aromatic Naphtha:
Inhalation 6 hour LC50..... >11.67 mg/L in rats
Skin Absorption LD50 ..... >3,160 mg/kg in rabbits
Oral LD50..... >5,000 mg/kg in rats

Naphthalene:
Inhalation 15 minute LC50: ..... >0.34 mg/L in rats
Skin Absorption LD50: ..... 10,000 mg/kg in rabbits
Oral LD50:..... 1,780 mg/kg in rats

Xylene (mixed isomers):
Inhalation 4 hour LC50..... 6,700 ppm in rats
Skin absorption LD50..... 4,320 mg/kg in rabbits
Oral ALD ..... 4,500 mg/kg in rats

Ethylbenzene:
Inhalation 4 hour LC50..... >4,000 ppm in rats
Skin absorption LD50..... ~15,000 mg/kg in mice
Oral LD50..... >3,500 mg/kg in rats

Vinyl Acetate Monomer:
Inhalation 4 hour LC50..... 4,000 ppm in rats
Skin Absorption LD50 ..... 2,335 mg/kg in rabbits
Oral LD50..... 2,920 mg/kg in rats

2-Ethylhexyl Nitrate:
Inhalation 1 hour LC50..... >639 ppm in rats
Skin absorption LD50..... >4,820 mg/kg in rabbits
Oral LD50..... >9,640 mg/kg in rats

Ethylene Glycol N-Butyl Ether:
Inhalation LC50..... 700 ppm in rats, 7 hours
Skin Absorption LD50 ..... 220 mg/kg in rabbits
Oral LD50..... 470 mg/kg in rats

Dermal absorption of Xylene in animals causes narcosis. Toxic effects described in animals by inhalation include upper respiratory irritation; central nervous system effects; behavioral effects; decreased weight gain; hearing loss; and effects on the blood, liver, kidneys, heart, spleen, lungs and bone marrow. By ingestion, xylene caused central nervous system effects; decreased body weight and liver effects. Tests of xylene in animals demonstrate no carcinogenic activity. Xylene does not produce heritable genetic damage in animals or genetic damage in bacterial or mammalian cell cultures. Although abnormal sperm were observed after an interperitoneal injection in rats, xylene did not produce reproductive effects. Developmental toxicity was observed in animals exposed to xylene but only at concentrations that were maternally toxic.

Vinyl Acetate is a slight skin and a severe eye irritant, but is untested for animal sensitization. No effects from repeated exposure to Vinyl Acetate by inhalation were observed at 100 ppm in rats. Exposure to higher concentrations of Vinyl Acetate by inhalation caused eye irritation and lacrimation, reduced weight gain, and irritation of the respiratory tract with breathing difficulty. The effects observed in rats and mice

exposed by inhalation to 200 and 600 ppm for two years include reduced body weight. Repeated exposures by administration of Vinyl Acetate in the drinking water caused decreased weight gain, and low liver weights. Reduced body weight occurred in rats administered 5000 ppm in their drinking water for two years. Vinyl acetate is weakly carcinogenic in rats, but not in mice. The compound does not have an adverse effect on the development of rats and its effect on reproduction is not considered significant. The genotoxicity of vinyl acetate is equivocal. Genetic damage was produced in some types of cell cultures and in animals, but was negative in other studies. No tests for heritable genetic damage were available.

Heavy Aromatic Naphtha is a severe skin irritant, and is an eye irritant, but is not a skin sensitizer in animals. Repeated inhalation exposures caused reduced growth rate, respiratory tract irritation, congestion in liver and spleen, changes in blood tests and equilibrium disturbances. No animal test reports are available to define carcinogenic, mutagenic, developmental or reproductive hazards. 2-Ethylhexyl Nitrate is not a skin and eye irritant, but is untested for animal sensitization. Single ingestion exposure produced weight loss, diarrhea, incoordination and prostration. Repeated inhalation exposures produced weight loss and increased liver weight. No animal test reports are available to define carcinogenic, mutagenic, developmental, or reproductive hazards.

12 Ecological Information

Xylene:

96 hour LC50 fathead minnow: 27-42 mg/L

Heavy Aromatic Naphtha:

96 hour LC50, fathead minnows: 4.2 – 20.8 mg/L

2-Ethylhexyl Nitrate:

24 hour LC50, Trout: 145 mg/L
48 hour LC50, Trout: 116 mg/L
24 hour LC50, Bluegill: 6.5 mg/L
48 hour LC50, Bluegill: 6.0 mg/L

13 Disposal Considerations

Waste Disposal

Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial and Local regulations.

14 Shipping Information

DOT

Proper Shipping Name..... Xylene Solution
Hazard Class 3
I.D. No. (UN/NA) ..... UN 1307
Packing Group III
Special Information ..... Flash Point: 38°C
Marine Pollutant ..... 2-Ethylhexyl Nitrate
DOT Label(s) ..... Flammable Liquid

IMO

Proper Shipping Name..... Xylene 30% Solution
Hazard Class 3
I.D. No. (UN) 1307
Packing Group III
Special Information ..... Flash Point: 38°C
Marine Pollutant ..... 2-Ethylhexyl Nitrate
IMO Label ..... Flammable Liquid

Reportable Quantity

Xylene..... 100 lbs.
Ethylbenzene ..... 1000 lbs.

Shipping Containers

Steel Drums UN1A1/Y/100

15 US Federal Regulations

TSCA Inventory Status..... Reported / Included

Title III Hazard Classifications Sections 311, 312

Acute ..... Yes
Chronic ..... Yes
Fire ..... Yes
Reactivity ..... Yes
Pressure ..... No

16 Other Information

NPCA-HMIS Rating

Health..... 2* (Chronic Health Effects)
Flammability..... 2
Reactivity 3

Personal Protection rating to be supplied by user depending on use conditions.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS:

Ann Marie Savini
Innospec Fuel Specialties
Newark, DE 19702
(800) 441-9547 or
(302) 451-1362